AMENDMENTS TO THE CLAIMS:

1. (currently amended) A fiber laser, comprising:

A section of fiber including,

A cladding formed from a phosphate glass host; and

A core formed from a similar phosphate glass host co-doped with 0.5-5.0 wt.% Er_2O_3 and 0.5-30 wt. % Yb_2O_3;

At least one wavelength-selective reflector having a characteristic linewidth, said reflector at least partially defining an optical resonant cavity of 5cm or less that includes the section of fiber; and

A source of pump radiation that illuminates the fiber to excite erbium and ytterbium ions in the Er_2O_3 and Yb_2O_3, respectively, and provide gain;

the length of said cavity being 5cm or less produces ~~producing~~ a mode spacing that is sufficiently wide with respect to the wavelength-selective reflector's linewidth so that the erbium lases at a single longitudinal mode and said fiber outputs a ~~single-mode~~ single longitudinal and single transverse mode signal.

2. (previously presented) The fiber laser of claim 1, wherein the source of pump radiation comprises a single-mode laser that illuminates the fiber core, said core being doped with 0.5-15.0 wt. % Yb_2O_3.

3. (previously presented) The fiber laser of claim 2, wherein the phosphate glass hosts include the following ingredients by weight percentages,

P_2O_5 from 30 to 80 percent,

L_2O_3 from 5 to 30 percent, and

MO from 5 to 30 percent,

wherein MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof; and

wherein the core is co-doped with Er_2O_3 from 0.5 to 5 wt. % and Yb_2O_3 from 0.5 to 5 wt. % with a sum of 2.5 to 10 wt. %.

4. (original) The fiber laser of claim 2, wherein the single-mode pump laser is rated at less than 250mW, said fiber laser providing more than 50mW of output power in the single-mode signal.

5. (previously presented) The fiber laser of claim 1, wherein the source of pump radiation comprises a multi-mode laser that illuminates the fiber cladding, said core being doped with 5-30 wt % Yb_2O_3.

6. (previously presented) The fiber laser of claim 5, wherein the phosphate glass hosts include the following ingredients by weight percentages,

P_2O_5 from 30 to 80 percent,

L_2O_3 from 5 to 30 percent, and

MO from 5 to 30 percent,

wherein MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof, and

wherein the core is co-doped with Er_2O_3 from 0.5 to 5 weight percent and Yb_2O_3 from 5 to 30 weight percent with a sum of 10 to 35 wt. %.

7. (original) The fiber laser of claim 5, wherein the

multi-mode pump laser is rated at less than 1.5 W, said fiber laser providing more than 50 mW of output power in the single-mode signal.

8. (currently amended) The fiber laser of claim 1, wherein the ~~erbium and ytterbium co-doped phosphate glass fiber provides a slope efficiency of at least 30 %~~ cladding is undoped.

9. (original) The fiber laser of claim 1, wherein the fiber core has a rectangular cross-section, which imparts a single polarization on the single-mode signal.

10. (original) The fiber laser of claim 1, further comprising a silica telecomm fiber, said phosphate fiber being fusion spliced to said silica telecomm fiber.

11. (original) The fiber laser of claim 10, wherein the wavelength-selective reflector is formed on said telecomm fiber.

12. (original) The fiber laser of claim 1, wherein the fiber exhibits a gain of greater than 1 dB over a range of wavelengths from 1530 nm to 1565 nm.

13. (original) The fiber laser of claim 12, wherein the fiber exhibits a peak gain of greater than 5 dB.

14. (currently amended) A fiber laser, comprising:

A section of fiber including

A cladding formed from a phosphate glass host;

and

A core formed from a similar phosphate glass host co-doped with 0.5-5.0 wt. % Er_2O_3 and 5-30 wt. % Yb_2O_3;

At least one wavelength-selective reflector having a characteristic linewidth, said reflector at least partially defining an optical resonant cavity of 5 cm or less that includes the section of fiber; and

A multi-mode laser that illuminates the fiber cladding to stimulate erbium and ytterbium ions in the Er_2O_3 and Yb_2O_3 co-doped core and provide gain;

the length of said cavity being 5cm or less produces ~~producing~~ a mode spacing that is sufficiently wide with respect to the wavelength-selective reflector's linewidth that the erbium lases at a single longitudinal mode and said fiber outputs a ~~single-mode~~ single longitudinal and single transverse mode signal.

15. (previously presented) The fiber laser of claim 14, wherein the phosphate glass hosts include the following ingredients by weight percentages,

P_2O_5 from 30 to 80 percent,

L_2O_3 from 5 to 30 percent,

MO from 5 to 30 percent,

wherein MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof, and

wherein the core is co-doped with Er_2O_3 from 0.5 to 5 weight percent and Yb_2O_3 from 5 to 30 weight percent with a sum of 10 to 35 wt. %.

16. (original) The fiber laser of claim 15, wherein the

multi-mode pump laser is rated at less than 1.5 W, said fiber laser providing more than 50 mW of output power in the single-mode signal.

17. (currently amended) A fiber laser, comprising:

A section of fiber including

A cladding formed from a phosphate glass host; and

A core formed from the phosphate glass host doped with 0.5 - 5.0 wt. % Er_2O_3 and 0.5-30 wt. % Yb_2O_3;

First and second telecom fibers formed from a silica glass and fusion spliced to opposite ends of the linear section of fiber;

First and second wavelength-selective reflectors formed on said first and second telecom fibers and having a characteristic linewidth, said reflectors defining an optical resonant cavity of 5cm or less that includes the section of fiber; and

A source of pump radiation that illuminates the fiber to excite erbium and ytterbium ions in the co-doped Er_2O_3 and Yb_2O_3 core and provide gain;

the length of said cavity <u>being 5cm or less produces</u> ~~producing~~ a mode spacing that is sufficiently wide with respect to the wavelength-selective reflector's linewidth that the erbium lases at a single longitudinal mode and said section of fiber outputs a ~~single-mode~~ <u>single longitudinal and single transverse mode</u> signal into said telecom fiber.

18. (previously presented) The fiber laser of claim 17, wherein the source of pump radiation comprises a single-

mode laser that illuminates the fiber core, said core being doped with 0.5-15.0 wt. % Yb_2O_3.

19. (previously presented) The fiber laser of claim 18, wherein the phosphate glass hosts include the following ingredients by weight percentages,

P_2O_5 from 30 to 80 percent,

L_2O_3 from 5 to 30 percent,

MO from 5 to 30 percent,

wherein MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof; and

wherein the core is co-doped with Er_2O_3 from 0.5 to 5 wt. % and Yb_2O_3 from 0.5 to 5 wt. % with a sum of 2.5 to 10 wt. %.

20. (original) The fiber laser of claim 18, wherein the single-mode pump laser is rated at less than 250mW, said fiber laser providing more than 50mW of output power in the single-mode signal.

21. (previously presented) The fiber laser of claim 17, wherein the source of pump radiation comprises a multi-mode laser that illuminates the fiber cladding, said core being doped with 5-30 wt. % Yb_2O_3.

22. (previously presented) The fiber laser of claim 21, wherein the phosphate glass hosts include the following ingredients by weight percentages,

P_2O_5 from 30 to 80 percent,

L_2O_3 from 5 to 30 percent,

MO from 5 to 30 percent,

wherein MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof; and

wherein the core is co-doped with Er_2O_3 from 0.5 to 5 weight percent and Yb_2O_3 from 5 to 30 weight percent with a sum of 10 to 35 wt. %.

23. (original) The fiber laser of claim 21, wherein the multi-mode pump laser is rated at less than 1.5 W, said fiber laser providing more than 50 mW of output power in the single-mode signal.

24. (currently amended) A fiber laser, comprising:

A section of fiber including,

A cladding formed from a phosphate glass host including P_2O_5 from 30 to 80 wt. %, L_2O_3 from 5 to 30 wt. %, MO from 5 to 30 wt. %, MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof; and

A core formed from the phosphate glass host co-doped with 0.5-5.0 wt.% Er_2O_3 and 0.5-30 wt. % Yb_2O_3, the sum of the weight percentages of Yb_2O_3 and Er_2O_3 being 2.5 to 35 wt. %;

At least one wavelength-selective reflector having a characteristic linewidth, said reflector at least partially defining an optical resonant cavity of 5cm or less that includes the section of fiber; and

A source of pump radiation that illuminates the fiber to excite erbium and ytterbium ions in the Er_2O_3 and Yb_2O_3 co-doped core and provide gain;

the length of said cavity being 5cm or less produces ~~producing~~ a mode spacing that is sufficiently wide with respect to the wavelength-selective reflector's linewidth so that the erbium lases at a single longitudinal mode and said fiber outputs a ~~single-mode~~ single longitudinal and single transverse mode signal.

25. (previously presented) The fiber laser of claim 24, wherein the core is co-doped with 0.5-5 wt. Er_2O_3 and 0.5-15 wt. % Yb_2O_3.

26. (previously presented) The fiber laser of claim 24, wherein the core is co-doped with 0.5-5 wt. Er_2O_3 and 0.5-5 wt. % Yb_2O_3.

27. (previously presented) The fiber laser of claim 24, further comprising:

A first telecom fiber formed of silica glass and fusion spliced to the linear section of fiber, said wavelength-selective reflector being formed on said telecom fiber.

28. (previously presented) The fiber laser of claim 27, further comprising:

A second telecom fiber formed of silica glass and fusion spliced to the other end of the linear section of fiber; and

A grating formed on said second telecom fiber.

29. (currently amended) A fiber laser, comprising:

A section of fiber including,

A cladding formed from a phosphate glass host including P_2O_5 from 30 to 80 wt. %, L_2O_3 from 5 to 30 wt. %, MO from 5 to 30 wt. %, MO is selected from BaO, BeO, MgO, SrO, CaO, ZnO, PbO and mixtures thereof, and L_2O_3 is selected from Al_2O_3, B_2O_3, Y_2O_3, La_2O_3, and mixtures thereof; and

A core formed from the phosphate glass host co-doped with 0.5-5.0 wt.% Er_2O_3 and 0.5-30 wt. % Yb_2O_3, the sum of the weight percentages of Yb_2O_3 and Er_2O_3 being 2.5 to 35 wt. %;

First and second telecom fibers formed of silica glass fusion spliced to opposite ends of the linear section of fiber;

First and second fiber bragg gratings (FBGs) formed on said first and second telecom fibers to define an optical resonant cavity of 5cm or less; and

A source of pump radiation that illuminates the fiber to excite erbium and ytterbium ions in the Er_2O_3 and Yb_2O_3 co-doped core and provide gain;

the length of said cavity being 5cm or less produces ~~producing~~ a mode spacing that is comparable to or larger than the first FBG's linewidth so that the erbium lases at a single longitudinal mode and said fiber outputs a single longitudinal and single transverse mode signal.

30. (previously presented) The fiber laser of claim 29, wherein the first telecom fiber is a polarization maintaining fiber.

31. (previously presented) The fiber laser of claim 29, wherein the core is co-doped with 0.5-5 wt. Er_2O_3 and 0.5-15 wt. % Yb_2O_3.

32. (previously presented) The fiber laser of claim 29, wherein the core is co-doped with 0.5-5 wt. Er_2O_3 and 0.5-5 wt. % Yb_2O_3.